

DEPARTMENT OF TRANSPORTATION**DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-001106**Date Inspected:** 29-Dec-2007**Project Name:** SAS Superstructure**OSM Arrival Time:** 2000**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 730**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Wu Ming Kai, Chen Xi**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Caltrans Mock-Up, OBG**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector, Ken Jobes, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China, to randomly monitor welding and Quality Control (QC) functions. While on site, the QA Inspector observed and/or discovered the following:

The Caltrans QA Inspector observed the Machine Flux Cored Arc Welding (FCAW) of WT stiffeners, RS17A's to bottom plate BP1 on the Orthotropic Box Girder (OBG). It was observed that all six of the WT stiffeners were attached to the bottom plate and two of them were being welded simultaneously on both sides in the horizontal fillet (2F) welding position and one was being welded on one side at the same time in the same welding position. This made five (5) welds being made at the same time on the gantry machine in Bay No. 3. The weld numbers were BP001-01-28, 29, 32, 33, and 36. Per Drawings BP1 and BP001, these welds are subject to SPCM requirements. A portion of the length of each stiffener is not subject to SPCM requirements and is assigned a different weld No. For instance, on the same stiffener, the SPCM portion is assigned Weld No. BP001-01-28 and the non-SPCM portion is assigned Weld No. BP001-01-010. The non-SPCM portion of these welds had been previously made. There were three welding operators making these five welds – Dong Jinbao (I. D. No. 049775), Xim Meng (I. D. No. 053742) and Li Shuliang (I. D. No. 048801), all of whose qualifications for semi-automatic FCAW in the 2F welding position are listed in ZPMC's Master List of Welders/Welding Operators/Tack Welders, Revision 7. Welding Procedure Specification (WPS) No. WPS-B-T-2132-3 was being used for this weld. ZPMC CWI's, Xu Xianping (CWI No. 07072071) and Wu Ming Kai (CWI No. 04082031) were present during this welding. The QA Inspector also noted that documentation of minimum/maximum preheat/interpass temperatures, voltage, amperage and travel speed by the CWI were within the specified ranges of the WPS up until the time of random observation.

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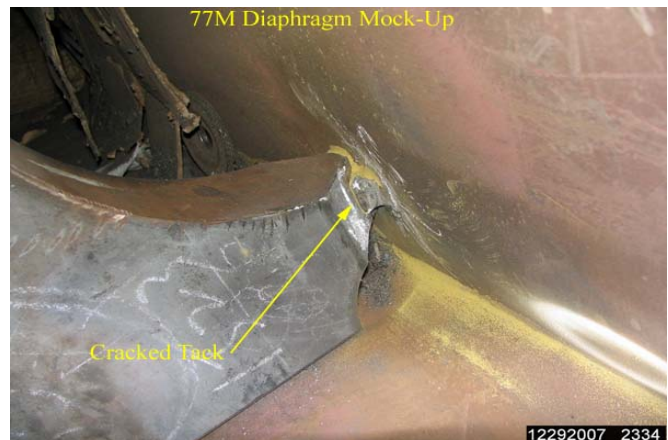
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The QA Inspector also observed that ZPMC had performed magnetic particle examination (MT) on tack welds joining stiffeners to MUSA-SA95 on the 77M Diaphragm Mock-Up. ZPMC had identified four cracked tack welds and marked them for repair by grinding. The four cracked tacks joined Piece Marks mp7 and mp9 to Piece Mark SA95. The QA Inspector did not observe the completion of the grinding.

The QA Inspector observed the tack welding of Piece Mark X2G to Floor Beam FB8, Side A, without any Quality Control or Quality Assurance personnel present. This observation was made with ZPMC QA Coordinator, Shen Xue Jun, and ZPMC CWI, Wu Ming Kai. The ZPMC QA Coordinator asked the production workers the reason and informed the QA Inspector that they only had one more stiffener to tack and wanted to finish it before they quit. See Incident Report dated 12-29-07. Applicable reference: Special Provisions for Contract No. 04-0120F4 replaces AWS D1.5-2002, Paragraph with the following, "The QC Inspector, or CAWI shall inspect and approve each joint preparation, assembly practice, welding technique, joint fit-up, and the performance of each welder, welding operator, and tack welder . . . Special Provisions also state that continuous inspection, as a minimum, shall include (1) having QC inspectors continually present . . . when any welding operation is being performed. Special Provisions also state that Inspection and approval of all joint preparations, assembly practices, joint fit-ups, welding techniques, and the performance of each welder, welding operator or tack welder, shall be documented by the QC Inspector.

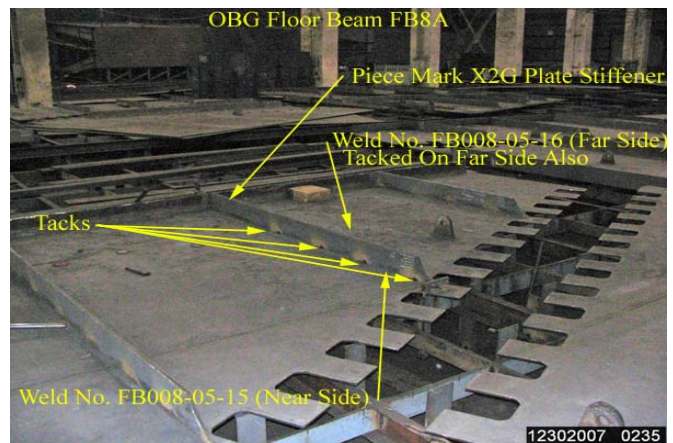
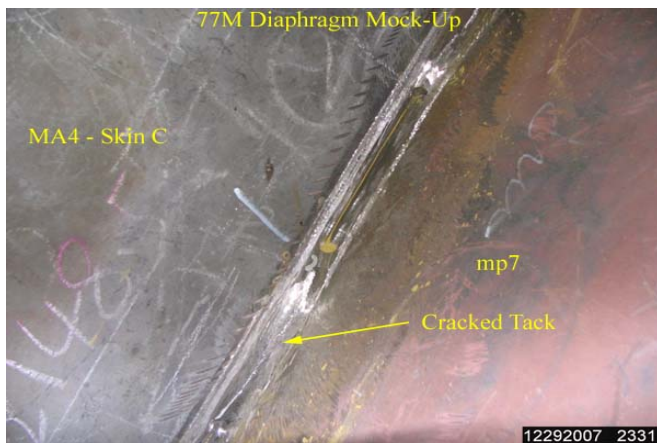
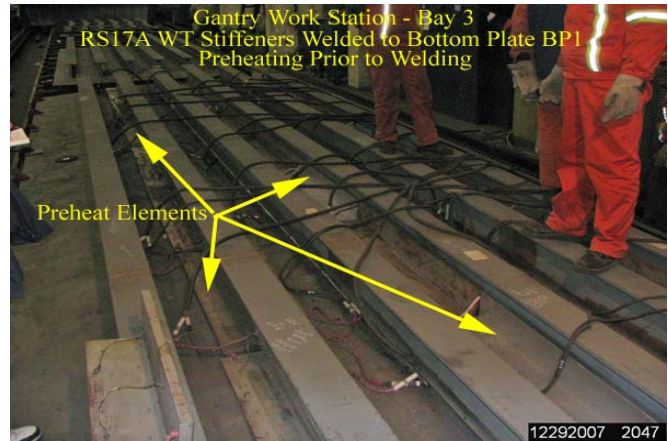
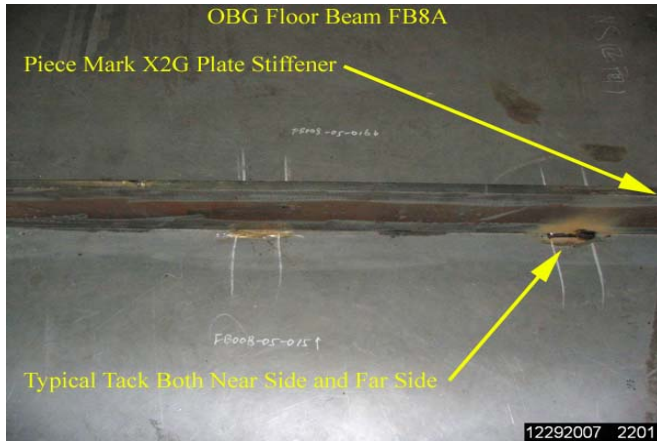
The Caltrans QA Inspector also randomly observed the manual Shielded Metal Arc Welding (SMAW) on the 89M Tower Mock-Up, Weld No. MUSB-MA26-31A-1. Early in the shift, the welder was Dai Lu (I. D. 048659). Later Han Xiaofeng (I. D. No. 054467) welded on the same weld number. Both welders' qualifications for this welding are listed in ZPMC's Master List of Welders/Welding Operators/Tack Welders, Revision 7. ZPMC CWI, Chen Xi (CWI No. 07072021) as well as Quality Control Inspector, An Qingxiang, were present during this welding. Welding Procedure Specifications (WPS's) WPS-B-T -3212-TC-U5b was used for this weld being welded in the vertical groove (3G) welding position. The QA Inspector noted that documentation of voltage, amperage and travel speed by the CWI were within the specified ranges of the WPS up until the time of random observation. The QA Inspector also randomly measured the amperage and voltage by use of a calibrated Fluke amp/volt meter. The specified electrode, Excalibur 9018M H4R was being used and portable electrode ovens were in use.

All observations appeared to meet the requirements of the job specifications.



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Summary of Conversations:

As identified within the contents of this report.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By: Jobes, Kenneth

Quality Assurance Inspector

Reviewed By: Cochran, Jim

QA Reviewer